

## A NEW SPECIES OF SIMULIUM (WILHELMIA) FROM TONGBAI MOUNTAIN, CHINA (DIPTERA, SIMULIIDAE)

CHEN Hai Bin<sup>1</sup>, LUO Hong Bin<sup>2</sup>

1. Guiyang Medical University, Guiyang 550004, China

2. Medical School of Hubei Institute for Nationalities, Enshi 445000, China

**Abstract** This paper describes a new species, *Simulium (Wilhelmia) tongbaishanense* sp. nov. (Diptera, Simuliidae) from China. The type specimens are deposited in the Department of Biology, Guiyang Medical University, China.

**Key words** Diptera, Simuliidae, *Simulium (Wilhelmia)*, new species.

*Wilhelmia* Enderlein is a small subgenus in the genus *Simulium* Latreille of the family Simuliidae. It includes 15 species in the world and 5 species are known from China (Crosskey and Theresa, 1997). In the present paper, a new species, *Simulium (Wilhelmia) tongbaishanense* sp. nov. is described.

*Simulium (Wilhelmia) tongbaishanense* sp. nov.  
(Figs. 1–16)

Female. Body length about 3.0 mm. Wing length about 2.5 mm.

Head. Frons and clypeus black, white grey-dusted, covered with several yellow hairs. Frontal ratio 9.5: 6.0: 7.5. Frons-head ratio 9.5: 33.0. Antenna composed of 2 + 9 segments which are brownish black except scape and pedicel pale yellow. Maxillary palp with 5 segments in proportion of 3.1: 2.8: 6.0: 5.9: 9.8; third segment of moderate size; sensory vesicle elongated, about 0.33 times as long as respective segment. Maxilla with 12 outer teeth and 6 inner ones. Mandible with 19 weak inner teeth and 11 outer ones. Glibarium armed smooth.

Thorax. Scutum black, covered densely with yellow pubescence and with three narrow, dark longitudinal lines. Scutellum black and covered with yellow pubescence. Postscutellum black and bare. Pleural membrane covered with hairs. Katepisternum bare. Legs. Foreleg: coxa and trochanter pale yellow; femur brown except yellow basally; tibia brown except yellow basally and with distal 1/4 brownish black; basitarsus black, W: L = 1.0: 7.0, rest of tarsal segments black. Midleg: as in the foreleg except coxa black and base of basitarsus yellow. Hindleg: coxa and trochanter pale brown; femur pale brown with distal

1/3 black; tibia brown with black subbasal ring; basal 3/5 of basitarsus and basal 1/2 of second tarsomere pale yellow and the rest of tarsal segments black. Hind basitarsus parallel-sided, W: L = 1: 6. Calcipala and pedisulcus well marked. All claws simple. Wing. Costa with spinules and hairs; subcosta hairy; basal section of R haired.

Abdomen. Basal scale dark brown, with fringe of pale hairs. Terga nearly black. Genitalia. Sternite of segment 8 with posterior margin broadly curved and with about 10 long setae on each posterior ridge but lacking any prominent projection directed forward. Spermatheca ellipsoidal, side. Anterior gonapophyses membranous, somewhat triangular in shape, covered with several microsetae, inner margins widely separated, each end with a transparent narrow long projection. Genital fork with slender sclerotized stem and widely expanded arms; arms with well sclerotized.

Male. Body length about 3.1 mm. Wing length about 2.6 mm.

Head. Clypeus black, white grey-dusted. Upper eye consisting of large facets in 13 vertical columns and 14 horizontal rows. Antenna composed of 2 + 9 segments, brown except scape and pedicel yellow. Maxillary palp with 5 segments, sensory vesicle about 0.4 times as long as 3rd segment.

Thorax. Scutum black, covered densely with yellow pubescence, unpattern. Scutellum black, covered with yellow pubescence. Postscutellum black and bare. Pleural membrane covered with hairs. Legs and wings: nearly as in female except tibia of hindleg more dark and lacking subbasal black ring.

Abdomen. Nearly as in female. Genitalia. Coxite very large and a little narrower distally. Styles arising

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sub terminally, small and curved. In ventral view, the ventral plate is of the shape of a wide V, with convex posterior margin and nearly straight proximal margin, ventral and posterior surface hairy; basal arms nearly as long as ventral plate and diverging from each other. Median sclerite large, oblong, covered densely with spines, its posterior end modified into a pair of wing-like lateral projections. Parameres each with about 6 strongly hooks.

Pupa. Body length about 3.0 mm.

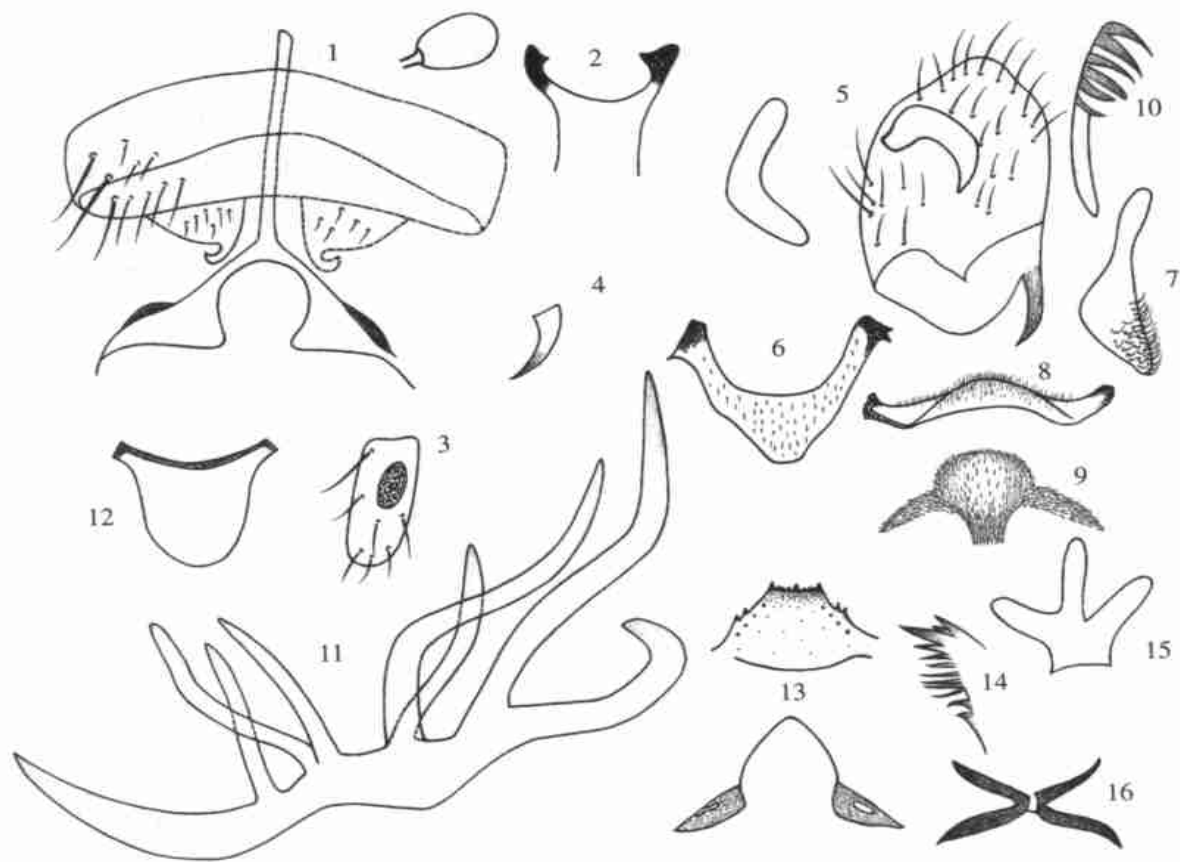
Head and thorax. Integument yellow, lacking tubercles except dorsal and lateral surface of posterior 1/2 of thorax with minute tubercles. Head with 3 pairs of simple trichomes; whereas the thorax with 6 pairs of simple and slender trichomes. Gill organ with 8 filaments, consisting of broad, thick walled, unpaired tubes, the main dorsal and ventral branches each curling partially around anterior end of pupa.

Abdomen. Terga 1 and 2 covered with tubercles. Tergum 1 with 1 simple seta on each side; tergum 2 with 5 simple short spines; terga 3 and 4 each with 4 hooked spines along posterior margins on each side.

Tergum 9 with terminal hooks. Sternum 5 with pair of bifid hooks submedially on each side; each of 6 and 7 with pair of bifid hooks widely spaced on each side. Cocoon: with narrow antero-ventral closure, tightly woven and with a strong anterior margin.

Mature larva. Body length about 5.0 mm; color yellowish brown.

Head. Cephalic apotome yellow, with faint, positive head spots. Antenna composed of 4 segments in proportion of 3.1: 4.0: 2.8: 0.2. Each cephalic fan with 38 main rays. Mandible with a large and a small teeth mandibular but without supernumerary serrations. Hypostomium with a row of 9 apical teeth, median and each corner teeth moderately longer than others; lateral serration present apically; 3-4 hypostomial setae diverging posteriorly from lateral margin on each side. Postgenal cleft large, mitre shaped, moderately pointed apically and about 3 times as long as postgenal bridge. Thoracic and abdominal integuments bare. Rectal papilla of 3 lobes, all simple. Anal sclerite X-formed, anterior arms about 0.6 times as long as posterior ones. Posterior circlet with about



Figs. 1-16. *Simulium (Simulium) tongbaishanense* sp. nov. 1. Female genitalia. 2. Gbarium. 3. Female sensory vesicle. 4. Female claw. 5. Coxite and style. 6. Ventral plate. 7. Ventral plate in lateral view. 8. Ventral plate in end view. 9. Median sclerite. 10. Parameral organ. 11. Pupal filaments. 12. Cocoon. 13. Larval head capsule in ventral view. 14. Larval Mandible. 15. Larval gills. 16. Larval anal sclerite.

108 rows of up to 24 hooklets per row.

Holotype ♀, reared from pupa, slide mounted, was collected from a rapid current from Tongbaishan (32°39' N, 120°07' E; 500 m), Hubei, China, water temperature 15°C, 10 Aug. 2004, by LOU Hong Bin. Paratypes: 1 ♀, 2 ♂♂, 11 pupae and 2 larvae, taken from trailing grasses by LUO Hong Bin same data as holotype.

Distribution. Hubei Province, China.

Remarks. According to the shape of pupa, the present new species seems to be most closely related to *S. (W.) takahashii* Rubtsov, 1955 from Japan, *S. (W.) xingyies* Chen and Zhang, 1998 and *S. (W.) pekingense* Sun, 1999 from China. The new species, however, can be readily separated from other related species mentioned above by the color of adult legs; the shape of genitalia in the female; the shape of

median sclerite in the male; the head and the anterior half of thorax integument lacking any tubercles in the pupa and the shape of postgenal cleft in the larva.

Etymology. The specific name was given by the type locality.

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## 桐柏山维蚋一新种 (双翅目, 蚋科)

陈汉彬<sup>1</sup> 罗洪斌<sup>2</sup>

1. 贵阳医学院生物学教研室 贵阳 550004

2. 湖北民族学院医学院生化教研室 恩施 445000

摘要 记述湖北省桐柏山维蚋 1 新种。模式标本存放于贵阳医学院生物学教研室。

桐柏山维蚋, 新种 *Simulium* (*Wilhelmia*) *tongbaishanense* sp. nov. (图 1~16)

根据蛹的形状, 新种似与高桥维蚋、兴义维蚋和北京维

关键词 双翅目, 蚋科, 维蚋, 新种, 桐柏山.

中图分类号 Q969. 442. 9

蚋近缘。但可根据成虫足的颜色、雌虫外生殖器的形状、蛹的头和前胸疣突缺如、幼虫后颊裂形状等综合特征与上述近缘种相区别。

正模♀, 副模 1 ♀, 2 ♂♂, 11 蛹及 2 幼虫, 2004 08 10, 幼虫和蛹采自湖北桐柏山急流中水草。